III. SURFACE WATER ASSESSMENT

D. RIVERS AND STREAMS WATER QUALITY ASSESSMENT

1. Designated Use Support

Approximately 38% (570 miles) of the 1,498 river miles (total miles at 1:24,000 scale) in Rhode Island have been assessed for this report. Of the 570 river miles assessed, 75% (429 miles) are considered monitored while 25% (141 miles) are considered evaluated. Table 3D-1 presents a summary of the degree of use support and the river miles that are monitored and evaluated. Of the 570 miles assessed, the majority of river miles fully support all uses (374 miles, 66%). While 34% (196 miles) of the river miles assessed are considered impaired for one or more uses.

Table 3D-2 shows that data was available to assess 457 river miles for swimming use support. The data showed that 72% (324.5 miles) fully support the swimming use, and approximately 29% (132 miles) are considered impaired for swimming use.

Data was available to assess 539 river miles for aquatic life use support. The data showed that 75% (406.5 miles) of the river miles assessed fully support aquatic life needs. Approximately 24% (132 miles) are considered impaired for aquatic life uses.

Data was available to assess 7.72 river miles for fish consumption use support. This represents the portion of the Woonasquatucket River from below Smithfield to the confluence with the Moshassuck River where the RIDOH has issued a no fish consumption advisory. This 7.72 river miles is considered impaired for fish consumption use.

Fifty-two (52) rivers reviewed for this report are located within Drinking Water Supply systems. These 52 rivers represents 113 river miles. Almost all of these rivers are considered unassessed for drinking water use. This is because the Department of Health only requires water quality data, to evaluate the source water, to be collected from the terminal reservoir of the system. The terminal reservoir is the location of the intake pumps. In general, sampling conducted elsewhere in the system has been determined by the DOH to be too limited in scope to use in conducting a drinking water use assessment. As shown in Table 3D-2, the 4.04 river miles assessed for drinking water use are fully supporting.

Table 3D-1 Summary of Fully Supporting, Threatened and Impaired Waters for Rivers and Streams (miles)

Degree of Use Support	Assessment Category		Total Assessed Size
	Evaluated	Monitored	
Size Fully Supporting All Assessed Uses	131.98	242.05	374.03
Size Impaired for One or More Uses	8.94	186.74	195.68
Size Not Attainable for Any Use and Not Included in the Line Items Above	0	0	0
TOTAL ASSESSED	140.92	428.79	569.71

Table 3D-2 Individual Use Support Summary for Rivers
(miles)

USE	Size Assessed	Size Fully Supporting	Size Fully Supporting but Threatened	Size Partially Supporting	Size Not Supporting
AQUATIC LIFE SUPPORT	538.57	406.50	0	65.96	66.11
DRINKING WATER SUPPLY	4.04	4.04	0	0	0
FISH CONSUMPTION	7.72	0	0	0	7.72
SWIMMING	456.92	324.52	0	47.30	85.10

2. Causes and Sources of Impairment of Designated Uses

Causes and sources of impairment for assessed waters that do not fully support their designated uses are listed in Table 3D-3 and 3D-4, respectively, according to the EPA guidance. Causes are those pollutants or other stressors that contribute to the actual or threatened impairment of designated uses in a waterbody. Sources are the facilities or activities that contribute pollutants or stressors, resulting in impairment of designated uses in a waterbody. In general, the actual sources of impairment are not determined until a TMDL (total maximum daily load) is conducted on the waterbody. As such, most of the sources noted are just potential sources. If the waterbody specific information indicated impact on designated use as being high, it is indicated under the "major impact" column of Tables 3D-3 and 3D-4. If the impact was determined to be moderate, it is listed on the tables in the "moderate" impact column.

Pathogens are the major cause of non support for rivers and streams. Sources appear to be point and non-point sources such as CSOs, seepage from failing septic systems, runoff during storm events and natural sources such as wildlife and waterfowl.

Another significant cause of nonsupport for rivers and streams are biodiversity impacts. The biological monitoring conducted around the state is utilized exclusively at some locations to assess water quality. Impairment of the physical habitat and/or biological community is generally due to nonpoint sources of pollution such as runoff, in addition to low flow conditions associated with drought years.

For rivers, another major impact is from the exceedance of the acute aquatic life criteria for metals, especially lead. The sources are complex and vary from permitted industrial and municipal discharges to combined sewer overflows (CSOs) and stormdrains. Another potential source which is not routinely evaluated and characterized is contaminated sediments. Nonpoint sources such as urban runoff, and sources from outside of the state's borders are also significant contributors of metals to Rhode Island rivers.

In the majority of cases there is not enough data to link the causes of nonsupport to a source of the pollutant. Potential sources of nonsupport (Table 3D-4) are, however, noted to include both point sources (CSOs, municipal and industrial discharges) and nonpoint sources (urban runoff and highway runoff).

Table 3D-3. Miles of Rivers and Streams Impaired by Various Cause Categories

Cause/Stressor Category	Size of Waters by Contribution to Impairment	
	Major	Moderate
AMMONIA (UNIONIZED)	16.61	
BIODIVERSITY IMPACTS	39.40	40.72
DIOXINS	7.72	
EXCESS ALGAL GROWTH/CHL-A	4.24	
METALS	35.50	69.46
NOXIOUS AQ. PLANTS native	1.59	
NUTRIENTS	18.19	11.02
LOW DO	22.38	13.31
PATHOGENS	37.89	92.24
PCBs	7.72	
UNKNOWN TOXICITY	2.27	1.82

Table 3D-4. Miles of Rivers and Streams Impaired by Various Source Categories

Source Category	Contribution to Impairment	
	Major	Moderate
AGRICULTURE		21.01
COMBINED SEWER OVERFLOW	8.92	1.64
CONSTRUCTION		4.00
CONTAMINATED SEDIMENTS	7.72	
GROUNDWATER LOADINGS	12.47	0.68
HYDROMODIFICATION	16.40	7.13
INDUSTRIAL POINT SOURCES	20.22	8.05
INTENSIVE ANIMAL FEEDING OPERATIONS		6.37
LAND DISPOSAL/SEPTIC SYSTEMS	27.96	28.60
MUNICIPAL POINT SOURCES	22.69	18.13
NATURAL SOURCES	3.72	36.20
RECREATIONAL AND TOURISM ACTIVITIES (non boating)		2.49
RESOURCE EXTRACTION		3.55
SEDIMENT RESUSPENSION	14.97	1.64
SOURCE UNKNOWN	10.61	44.97
URBAN RUNOFF/STORM SEWERS	30.15	122.08